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LOWER COOK INLET SOCKEYE (Oncorhynchus nerka) AND CHUM (O. keta) SALMON AGE, WEIGHT, AND LENGTH STATISTICS

By:
Thomas R. Schroeder

February 1985

ALASKA DEPARTMENT OF FISH AND GAME
P. O. Box 3-2000, Juneau, Alaska 99802

Don W. Collinsworth
Commissioner

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Data presented in these reports is intended to be final, however, some revisions may occasionally be necessary. Minor revision will be made via errata sheets. Major revisions will be made in the form of revised reports.

LOWER COOK INLET SOCKEYE *(Oncorhynchus nerka)* AND CHUM *(O. keta)* SALMON AGE, WEIGHT, AND LENGTH STATISTICS

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Thomas R. Schroeder

Alaska Department of Fish and Game
Division of Commercial Fisheries
Homer, Alaska 99603

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FOREWORD

This data report is the second in a series containing commercial catch sampling data for the Lower Cook Inlet area. The objective of the report is to present a compilation of the 1984 age, weight, and length sampling data for sockeye and chum salmon stocks in the Lower Cook Inlet management area for easier reference and comparison in the future.

ABSTRACT

Age, weight, and length samples of sockeye salmon *(O. nerka)* and chum salmon *(O. keta)* taken in 1984 in the Lower Cook Inlet management area are presented. Harvest figures have been prorated to the age classes indicated by the samples. Sampling generally confirmed the strong two-ocean sockeye salmon returns expected to Chenik Lake and China Poot Lake, but also indicated unexpectedly strong two-ocean returns to Aialik Lake and Nuka Bay. Chum salmon returns comprised a much smaller percentage of 5-year-old fish because of poor escapements in 1979. The 4-year-old segment of the return was stronger than expected in most streams. Over 42% of the McNeil River return was 6-year-old chum salmon, further increasing the overall production of the 1978 spawning escapement.

KEY WORDS: Sockeye salmon, chum salmon, *Oncorhynchus*, biological sampling, age, weight, and length.

INTRODUCTION

The Lower Cook Inlet management area is divided into five management districts (Figure 1). All, except the Barren Islands District, are salmon management districts which are further divided into 25 subdistricts or sections for more precise management of discrete stocks of salmon (Figures 2-6). Many of these subdistricts and sections contain stocks of sockeye *(Oncorhynchus nerka)* and chum *(O. keta)* salmon, while others are primarily pink salmon *(O. gorbuscha)* producing systems. Harvests of sockeye and chum salmon, while averaging under 20% of the total harvest for the area for the past 30 years, have increased in recent years to where these two species account for over 60% of the total ex-vessel value of salmon to Lower Cook Inlet fishermen.

The first major salmon age, weight, and length (AWL) sampling effort for Lower Cook Inlet was conducted in 1983 and the 1984 sampling was a continuation of that project. The sampling objectives were altered because of information received during the 1983 sampling project. Set net fishermen from Kasitsna Bay and Barabara Point indicated they had caught a large number of sockeye salmon which averaged under 2.3 kg (5 lb), considerably below the normal 2.7 to 3.0 kg (6 to 6-1/2 lb) sockeye salmon bound for Upper Cook Inlet. This group of smaller sockeye was believed to be of China Poot origin and the 1984 AWL sampling program stressed sampling set net caught sockeye from Kasitsna Bay to Seldovia Bay.

METHODS

The stocks of sockeye and chum salmon to be sampled in Lower Cook Inlet were located in 19 different systems spread throughout a 386 km (240 mi) area from McNeil River in the west to Seward in the east (Figures 2-6).

Nine sockeye salmon stocks were identified, located at Resurrection Bay, Aialik Bay, Delight and Desire Lakes, English Bay Lakes system, China Poot Bay (Leisure Lake), Kamishak-Douglas River, Mikfik Lake, and Chenik Lake. Eleven chum salmon stocks were identified, located at Tonsina Creek, Island Creek, Dogfish Lagoon, Tutka Bay, Silver Beach, Kamishak River, McNeil River, Bruin Bay, Ursus Cove, Cottonwood, and Iniskin Bays.

Due to the logistic difficulties involved, not all stocks could be sampled. Logistics often required the sampler to make extended trips on board a tender or to travel and remain overnight in Seward, which restricted sampling to no more than one stock or species at a time. A major difference between even and odd year returns further complicated sampling efforts. Due to the smaller returns to many systems during 1984, tenders frequently picked up salmon from several subdistricts and often had Upper Cook Inlet fish mixed in as well. This precluded any "dockside" sampling in Homer or Seward and greatly limited the catch that could be sampled with one sampler.

Standard AWL sampling procedures were used as recommended by the Statewide Stock Separation Project (Sharr 1981). Fish were measured to the nearest millimeter (mm) from the middle of the eye to the fork of the tail and fish were weighed to the nearest 0.05 kilogram (kg). Sample number as recommended in a memo concerning

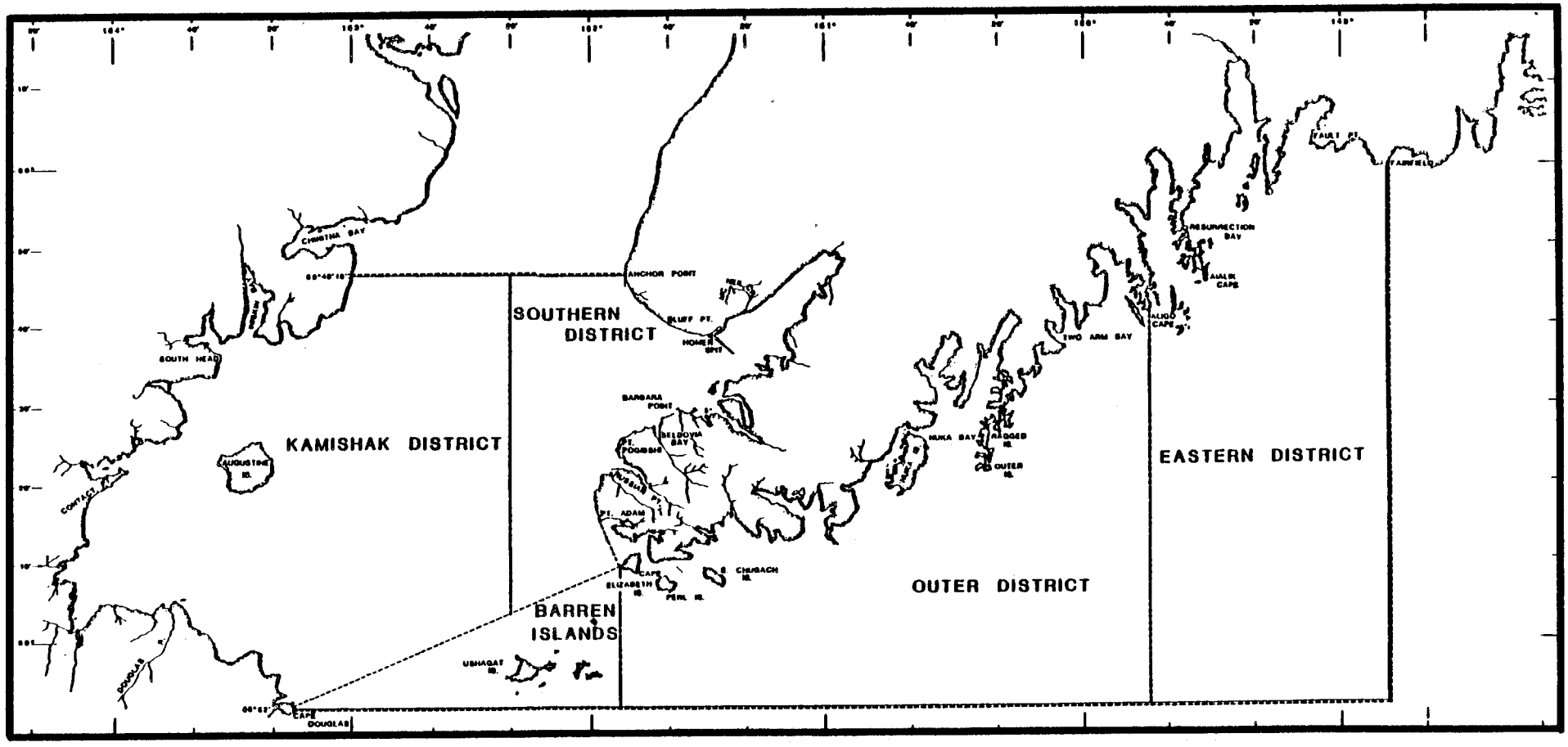

Figure 1. Lower Cook Inlet Management Area.

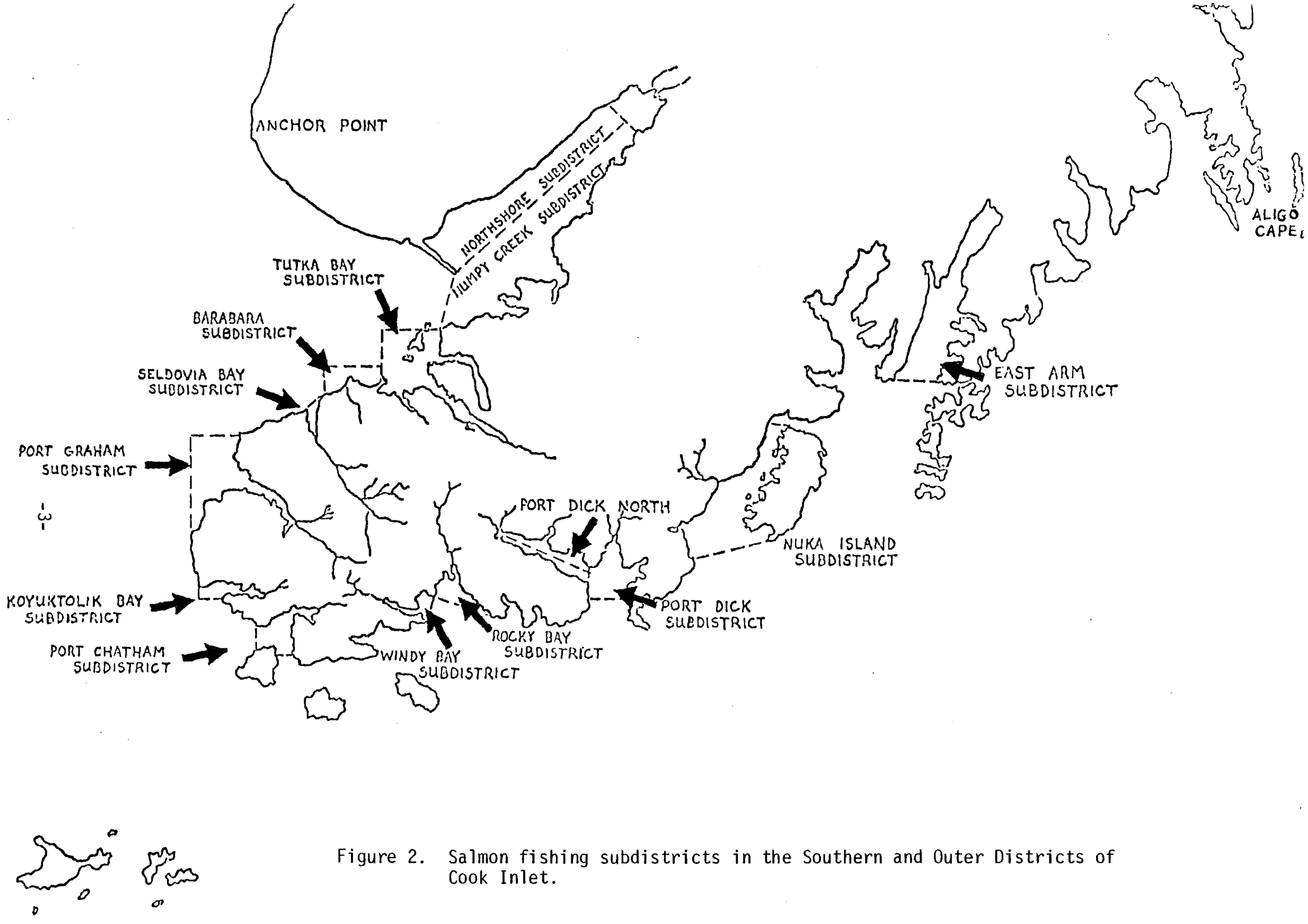

Figure 2. Salmon fishing subdistricts in the Southern and Outer Districts of Cook Inlet.

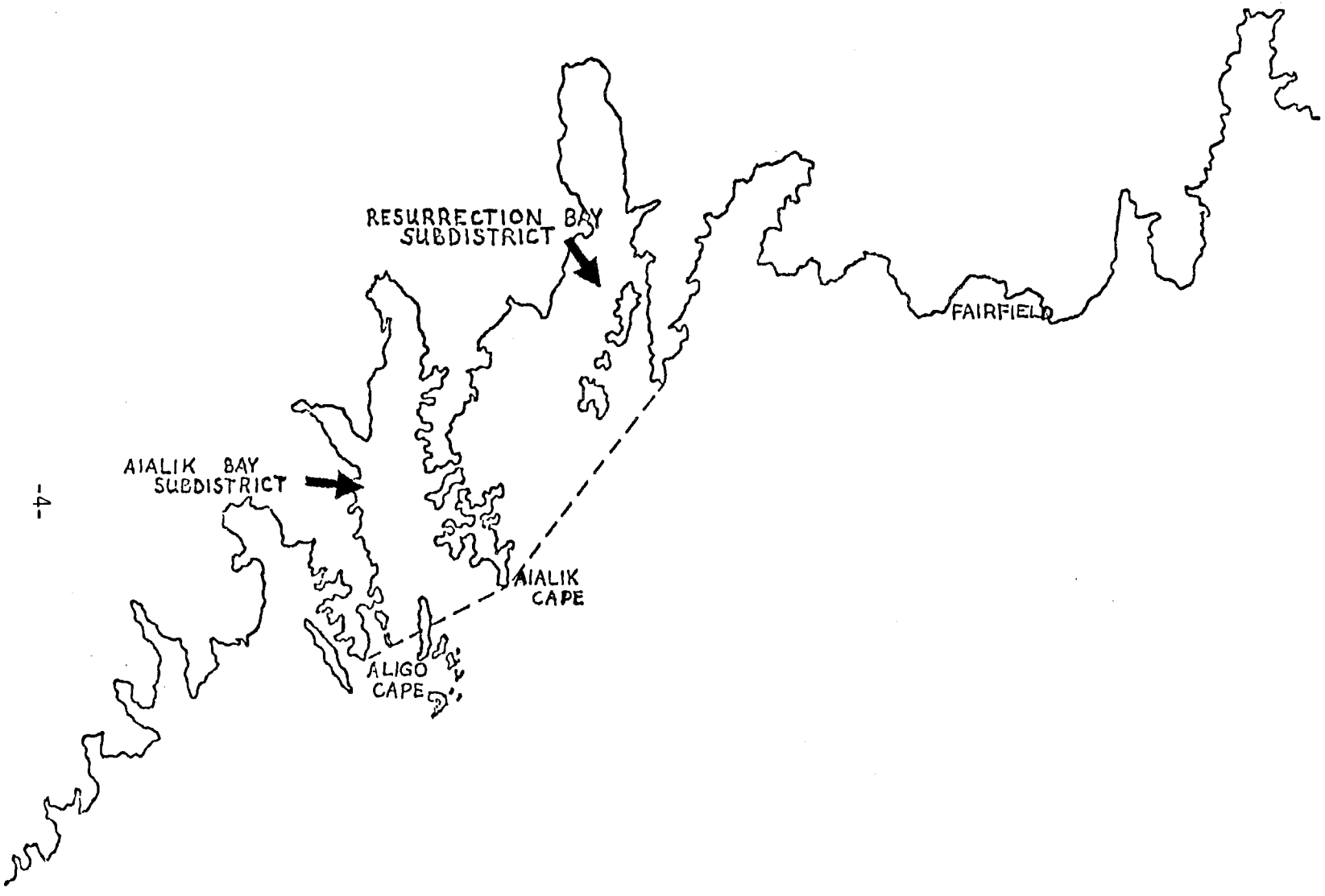

Figure 3. Salmon fishing subdistricts in the Eastern District of Cook Inlet.

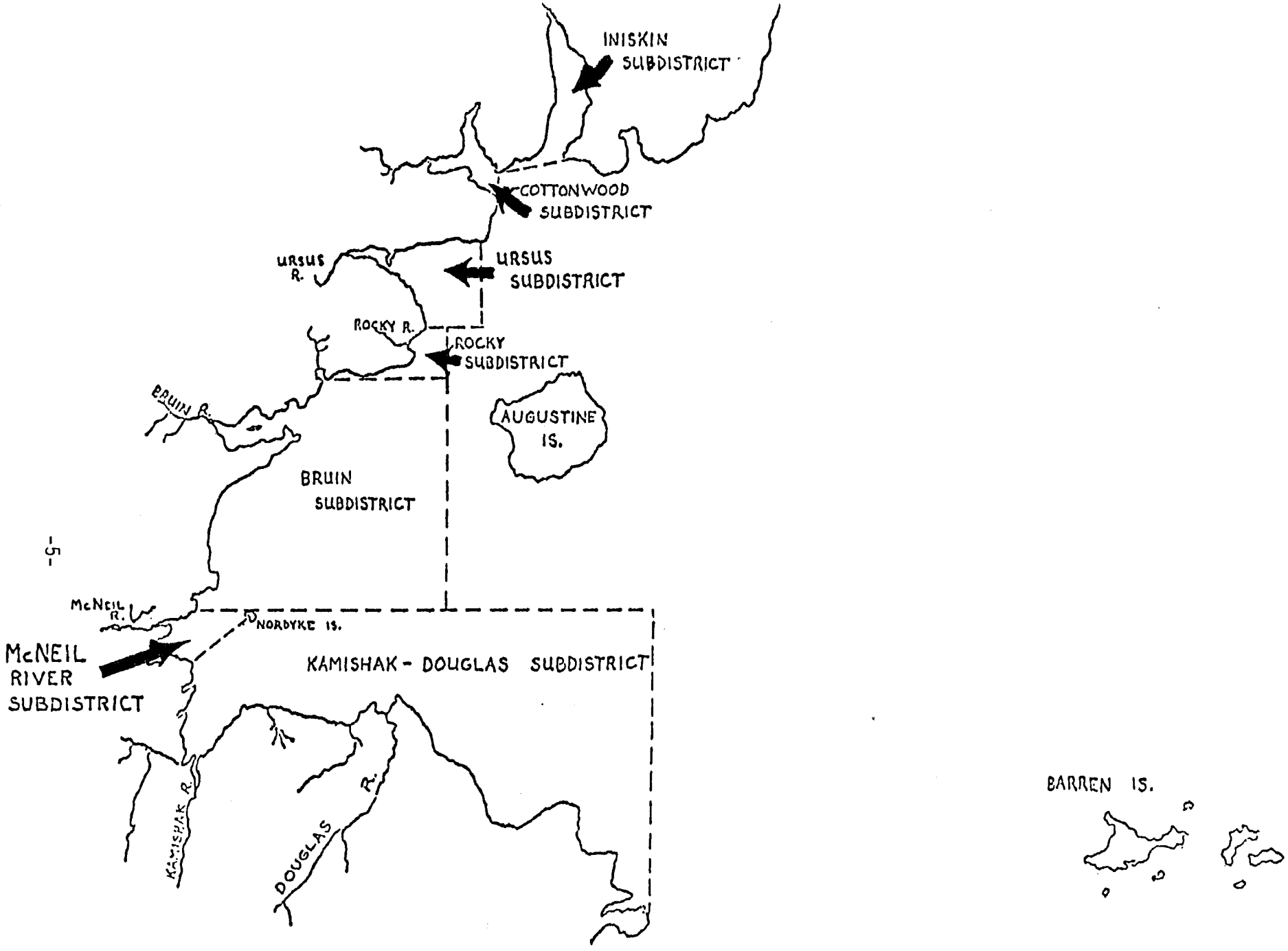

Figure 4. Salmon fishing subdistricts in the Kamishak Bay districts of Cook Inlet.

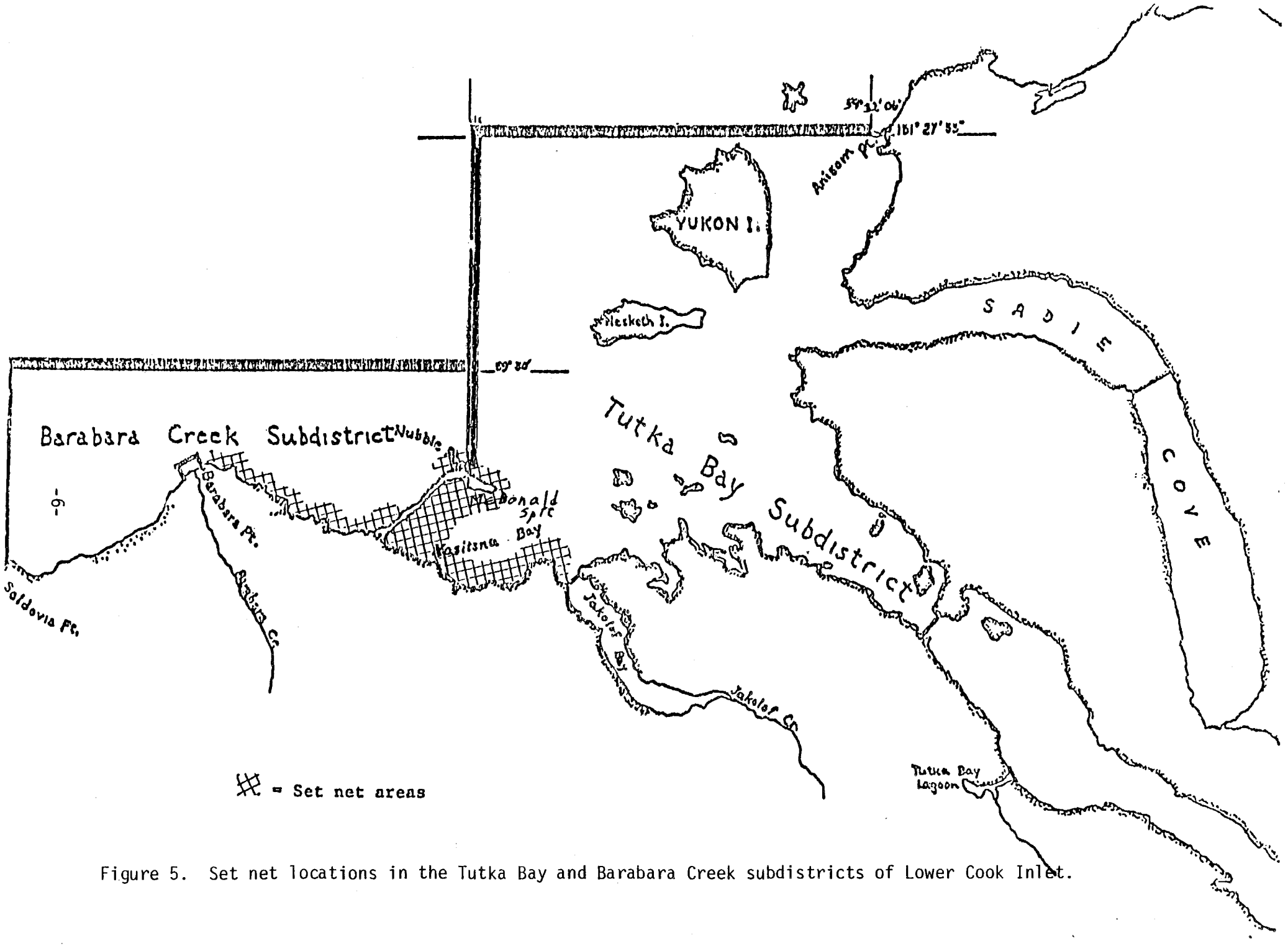

Figure 5. Set net locations in the Tutka Bay and Barabara Creek subdistricts of Lower Cook Inlet.

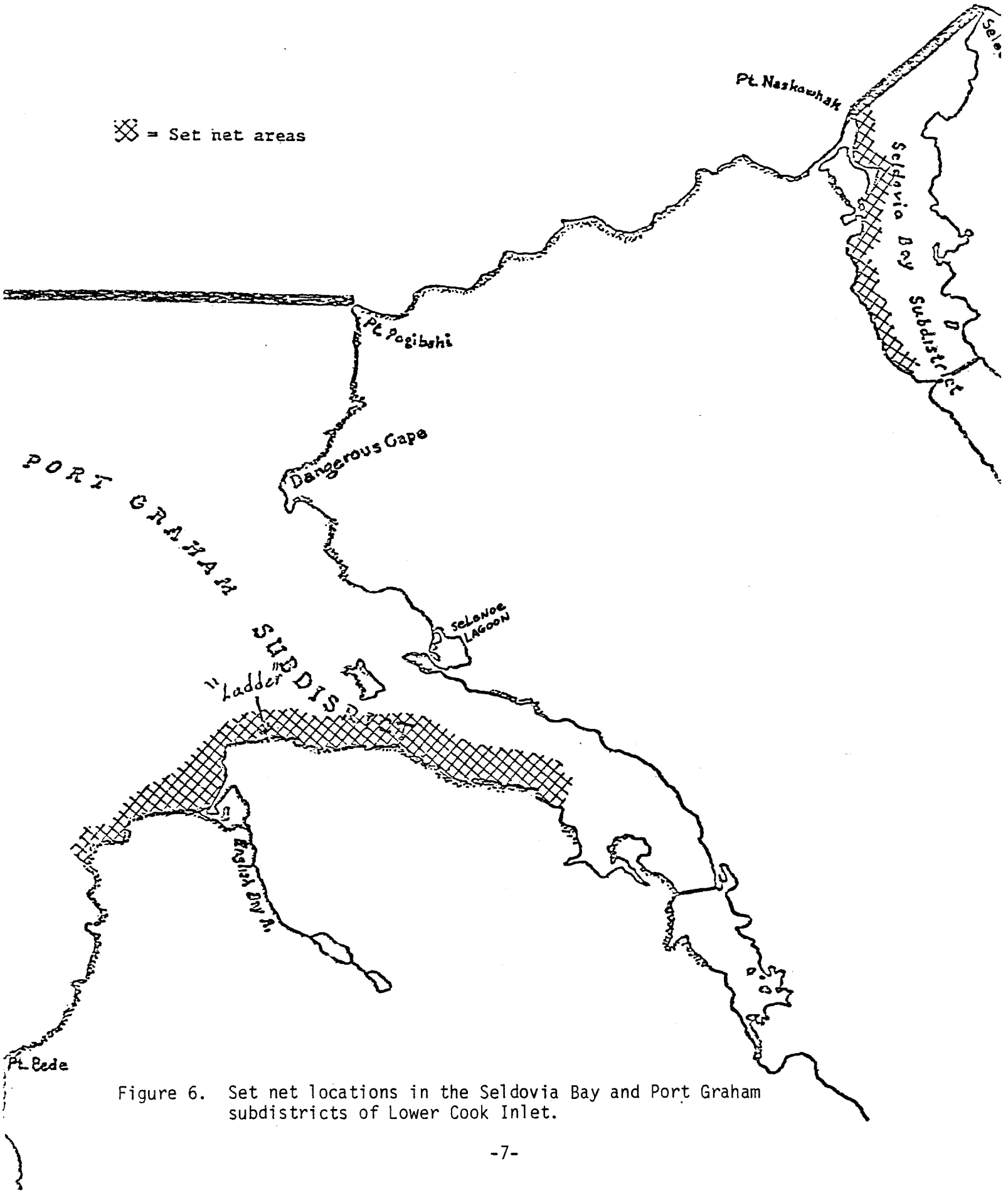

Figure 6. Set net locations in the Seldovia Bay and Port Graham subdistricts of Lower Cook Inlet.

statewide standards for AWL sample sizes were adhered to as much as was reasonable and physically possible (Bernard 1982).

Scales were read using the Gilbert-Rich[1] age designation and all samples were entered into files on a Vector Graphics computer. Data were analyzed by an AWL summary program (Yuen 1983). Weighted standard errors contained in the AWL program are referenced in Yuen, Bue, and Meacham (1981). The harvest figures listed for the various areas in 1984 are preliminary estimates based on processor catch reports and tender reports.

RESULTS AND DISCUSSION

Sockeye Salmon

Sockeye salmon were sampled from practically all areas in Lower Cook Inlet with the exception of the Mikfik and English Bay Lakes returns. Particular emphasis was placed on sampling the China Poot return and the set gillnet catches from Kasitsna Bay to Seldovia Bay to determine the interception of China Poot sockeye by the gillnet fishery.

The sockeye salmon return to Bear Lake to Resurrection Bay was fished for the first time since 1971. Only a limited number of samples were taken because of the logistics and the small harvest being spread out over a long period of time. Data contained in Table 1 show the primary age class to be age 4_2 sockeye salmon, as expected.

Aialik Lake, often referred to as Pederson Lake, had an extremely strong return for a 34.8 hectare (86 acre) pond. Over 70,000 sockeye salmon returned to this system in 1984 and the harvest of 48,500 fish was comprised of primarily age 4_2 and 5_2 fish (Table 2). This is similar to the 1983 data, but the 1984 return had a higher percentage of age 5_2 fish, probably due to the strength of the 1979 parent year production indicated by the strong 4_2 return in 1983. Average length and weights for these two age classes were slightly higher, but similar to 1983 data. Overall average weights for the harvest were 0.27 kg larger, due primarily to the presence of the 6-year-old sockeye in the 1984 harvest.

The Nuka Bay sockeye salmon harvest is comprised of fish bound for Delight and Desire Lake. Returns in 1972 and 1977, which were primarily Desire Lake fish, averaged over 2.7 kg (6 lb) and were primarily 3-ocean adults, whereas, the 1983 and 1984 returns contained a much higher percentage of 2-ocean adult sockeye (Table 3, Schroeder 1984). The 1984 harvest of 28,449 sockeye was 50% higher than 1983. Average lengths and weights of 4_2 and 5_2 adults were slightly lower than in 1983. Age 4_2 sockeye comprised 60% of the harvest.

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[1] Gilbert-Rich Formula - Total years of life at maturity (large type) - year of life at outmigration from freshwater (subscript).

Table 1. Resurrection Bay commercial catch of sockeye salmon by age and sex with length (mm) and weight (kg), 1984[1].

ALL PERIODS COMBINED

	AGE GROUP				
	42	52	53	63	TOTAL
MALES	1,527	Ø	61	Ø	1,588
PERCENT	45.45	Ø.ØØ	1.82	Ø.ØØ	47.26
AV LENGTH	522.6Ø	Ø.ØØ	5Ø9.ØØ	Ø.ØØ	522.Ø8
STD ERROR	3.67	Ø.ØØ	Ø.ØØ	Ø.ØØ	3.53
SAMP SIZE	25	Ø	1	Ø	26
AV WEIGHT	2.5Ø	Ø.ØØ	2.3Ø	Ø.ØØ	2.49
STD ERROR	.Ø6	Ø.ØØ	Ø.ØØ	Ø.ØØ	.Ø6
SAMP SIZE	25	Ø	1	Ø	26
FEMALES	1,528	61	122	61	1,772
PERCENT	45.48	1.82	3.63	1.82	52.74
AV LENGTH	487.ØØ	511.ØØ	496.5Ø	537.ØØ	49Ø.2Ø
STD ERROR	6.32	Ø.ØØ	.5Ø	Ø.ØØ	5.45
SAMP SIZE	25	1	2	1	29
AV WEIGHT	1.84	2.1Ø	2.1Ø	2.3Ø	1.88
STD ERROR	.Ø6	Ø.ØØ	Ø.ØØ	Ø.ØØ	.Ø5
SAMP SIZE	25	1	2	1	29
BOTH SEX	3,Ø55	61	183	61	3,36Ø
PERCENT	9Ø.92	1.82	5.45	1.82	1ØØ.ØØ
AV LENGTH	5Ø4.79	511.ØØ	5ØØ.67	537.ØØ	5Ø5.27
STD ERROR	3.65	Ø.ØØ	.33	Ø.ØØ	3.32
SAMP SIZE	5Ø	1	3	1	55
AV WEIGHT	2.17	2.1Ø	2.17	2.3Ø	2.17
STD ERROR	.Ø4	Ø.ØØ	Ø.ØØ	Ø.ØØ	.Ø4
SAMP SIZE	5Ø	1	3	1	55

[1] Preliminary catch data.

Table 2. Aialik Bay commercial catch of sockeye salmon by age and sex with length (mm) and weight (kg), 1984[1].

ALL PERIODS COMBINED

	AGE GROUP						
	32	42	52	53	62	63	TOTAL
MALES	107	12,419	9,957	857	0	642	23,982
PERCENT	.22	25.61	20.53	1.77	0.00	1.32	49.45
AV LENGTH	400.00	514.97	580.94	528.75	0.00	586.33	544.25
STD ERROR	0.00	2.78	2.43	7.06	0.00	12.59	1.81
SAMP SIZE	1	116	93	8	0	6	224
AV WEIGHT	0.00	2.42	3.34	2.37	0.00	2.90	2.81
STD ERROR	0.00	.06	.07	.28	0.00	0.00	.04
SAMP SIZE	0	54	38	2	0	1	95
FEMALES	0	12,528	10,706	428	535	321	24,518
PERCENT	0.00	25.83	22.07	.88	1.10	.66	50.55
AV LENGTH	0.00	492.54	556.96	511.50	546.00	565.00	523.12
STD ERROR	0.00	2.23	2.22	7.75	10.82	6.25	1.52
SAMP SIZE	0	117	100	4	5	3	229
AV WEIGHT	0.00	2.01	2.93	2.33	2.85	3.00	2.45
STD ERROR	0.00	.04	.05	.08	0.00	.05	.03
SAMP SIZE	0	56	59	2	1	2	120
BOTH SEX	107	24,947	20,663	1,285	535	963	48,500
PERCENT	.22	51.44	42.60	2.65	1.10	1.99	100.00
AV LENGTH	400.00	503.71	568.52	523.00	546.00	579.22	533.57
STD ERROR	0.00	1.78	1.64	5.37	10.82	8.65	1.18
SAMP SIZE	1	233	193	12	5	9	453
AV WEIGHT	0.00	2.21	3.13	2.36	2.85	2.93	2.63
STD ERROR	0.00	.04	.04	.14	0.00	.03	.03
SAMP SIZE	0	110	97	4	1	3	215

[1] Preliminary catch data.

Table 3. Nuka Bay commercial catch of sockeye salmon by age and sex with length (mm) and weight (kg), 1984[1].

ALL PERIODS COMBINED

	AGE GROUP							
	41	42	52	53	62	63	73	TOTAL
MALES	0	8,507	3,259	442	110	1,050	0	13,368
PERCENT	0.00	29.90	11.46	1.55	.39	3.69	0.00	46.99
AV LENGTH	0.00	506.22	572.51	511.12	568.50	582.16	0.00	529.02
STD ERROR	0.00	2.09	3.78	8.76	8.50	6.17	0.00	1.72
SAMP SIZE	0	154	59	8	2	19	0	242
AV WEIGHT	0.00	2.18	3.23	2.10	3.10	3.16	0.00	2.52
STD ERROR	0.00	.05	.10	.13	.05	.15	0.00	.04
SAMP SIZE	0	54	29	6	2	10	0	101
FEMALES	55	8,785	4,530	939	110	552	110	15,081
PERCENT	.19	30.88	15.92	3.30	.39	1.94	.39	53.01
AV LENGTH	549.00	489.88	549.01	485.29	544.00	530.30	554.00	509.91
STD ERROR	0.00	1.96	2.37	5.81	3.00	8.87	3.00	1.43
SAMP SIZE	1	159	82	17	2	10	2	273
AV WEIGHT	0.00	1.84	2.63	1.93	0.00	2.38	2.20	2.11
STD ERROR	0.00	.03	.04	.15	0.00	.11	0.00	.03
SAMP SIZE	0	54	45	6	0	6	1	112
BOTH SEX	55	17,292	7,789	1,381	220	1,602	110	28,449
PERCENT	.19	60.78	27.38	4.85	.77	5.63	.39	100.00
AV LENGTH	549.00	497.92	558.84	493.56	556.25	564.29	554.00	518.89
STD ERROR	0.00	1.43	2.10	4.85	4.51	5.07	3.00	1.11
SAMP SIZE	1	313	141	25	4	29	2	515
AV WEIGHT	0.00	2.01	2.88	1.98	3.10	2.89	2.20	2.30
STD ERROR	0.00	.03	.05	.10	.05	.10	0.00	.02
SAMP SIZE	0	108	74	12	2	16	1	213

[1] Preliminary catch data.

The 1984 Leisure Lake sockeye salmon return to China Poot Bay was again phenomenal. The harvest of 104,364 fish was comprised of 92% age 4_2, 3% age 5_2, and 5% age 5_3 sockeye (Table 4). The return was dominated by the 4_2 age class as it was in 1980, 1981, and 1983 (Schroeder 1984). Average length and weight of age 4_2 sockeye were below those in 1983 and may be related to the 20 mm decrease in the size of smolt leaving Leisure Lake in 1981 and 1982.

AWL data for sockeye salmon harvested by set gillnets in the Tutka Bay and Seldovia Bay subdistricts is presented in Table 5. Age 4_2, 5_2, and 5_3 sockeye salmon comprised 84% of the harvest in these two subdistricts. Based on preliminary subjective comparisons of the physical characteristics of the freshwater growth of age 4_2, 5_2, and 5_3 sockeye salmon scale samples taken from the set gillnet harvest, it appears that 81% of the age 4_2, 17% of the age 5_2, and 71% of the age 5_3 sockeye were of China Poot (Leisure Lake) origin. Furthermore, of those samples taken from Seldovia Bay set gillnets, 60, 13, and 50% of the age 4_2, 5_2, and 5_3 sockeye salmon, respectively, appeared to be China Poot fish. Depending on time and adequacy of samples, these samples will be further analyzed by the stock separation group which uses a discriminate analysis computer program to analyze growth patterns of sockeye salmon scales to determine the lake or stream origin of the fish.

The Chenik Lake sockeye return was comprised of only two age classes as was also the case in 1983. However, in 1984 a shift to over 96% age 4_2 fish (Table 6) was probably a direct result of the 1981 lake stocking of over 1.0 million sockeye salmon fry. Although average lengths and weights were similar to those of 1983 for each age class, the age 4_2 sockeye, which were from the same Tustemena Lake brood stock as the China Poot sockeye, weighed 23% less than age 4_2 sockeye from China Poot (Tables 4 and 6).

Chum Salmon

Tonsina Creek, located on the west shore of Resurrection Bay, is the donor source for chum salmon eggs for the Trail Lakes Hatchery. The 1984 chum salmon harvest was comprised of 90% age 4_1 and 10% age 5_1 fish (Table 7). Age 4_1 chum salmon made up a larger percentage of the return than in 1983 and were slightly smaller in average length and weight, while age 5_1 chum salmon were slightly larger than the 1983 fish (Table 7, Schroeder 1984).

Chum salmon bound for numerous small spawning streams in Aialik Bay made a very significant contribution to the area's harvest. Only a limited number of chum salmon samples were taken incidently to the sockeye samples. All samples taken were age 4_1 chum salmon and average lengths and weights were 10 and 20% larger, respectively, than age 4_1 chum salmon samples from the Tonsina Creek harvest in Resurrection Bay (Table 8).

The Douglas River area of Kamishak Bay produced a fair chum salmon harvest in 1984. Data presented in Table 9 indicate age 4_1 chum comprised almost 74% of the harvest. This age class composition represented a complete shift from sampling data obtained in 1982 (Schroeder 1984).

The McNeil River chum salmon harvest was considerably below recent years' harvest. The return was comprised of age 4_1, 5_1, and 6_1 chum salmon (Table 10).

Table 4. China Poot Bay commercial catch of sockeye salmon by age and sex with length (mm) and weight (kg), 1984[1].

ALL PERIODS COMBINED

	AGE GROUP					
	42	52	53	62	63	TOTAL
MALES	55,632	1,941	1,509	0	216	59,298
PERCENT	53.31	1.86	1.45	0.00	.21	56.82
AV LENGTH	493.61	526.00	513.43	0.00	565.00	495.43
STD ERROR	1.36	13.63	7.74	0.00	0.00	1.36
SAMP SIZE	258	9	7	0	1	275
AV WEIGHT	2.02	2.66	2.26	0.00	2.90	2.05
STD ERROR	.02	.12	.11	0.00	0.00	.02
SAMP SIZE	178	8	7	0	1	194
FEMALES	40,106	647	4,097	216	0	45,066
PERCENT	38.43	.62	3.93	.21	0.00	43.18
AV LENGTH	493.95	548.67	501.05	511.00	0.00	495.46
STD ERROR	1.62	9.41	6.00	0.00	0.00	1.55
SAMP SIZE	186	3	19	1	0	209
AV WEIGHT	1.90	2.80	1.97	2.50	0.00	1.92
STD ERROR	.03	.15	.09	0.00	0.00	.02
SAMP SIZE	118	3	14	1	0	136
BOTH SEX	95,738	2,588	5,606	216	216	104,364
PERCENT	91.73	2.48	5.37	.21	.21	100.00
AV LENGTH	493.75	531.67	504.38	511.00	565.00	495.45
STD ERROR	1.04	10.49	4.85	0.00	0.00	1.02
SAMP SIZE	444	12	26	1	1	484
AV WEIGHT	1.97	2.70	2.05	2.50	2.90	1.99
STD ERROR	.02	.10	.07	0.00	0.00	.02
SAMP SIZE	296	11	21	1	1	330

[1] Preliminary catch data.

Table 5. Tutka Bay and Seldovia Bay commercial set net catch of sockeye salmon by age and sex with length (mm) and weight (kg), 1984[1].

ALL PERIODS COMBINED

	AGE GROUP							
	31	41	42	52	53	62	63	TOTAL
MALES	0	236	3,889	9,191	3,182	471	2,592	19,561
PERCENT	0.00	.64	10.51	24.84	8.60	1.27	7.01	52.87
AV LENGTH	0.00	547.50	499.91	569.71	523.81	560.00	567.64	547.59
STD ERROR	0.00	18.50	5.02	3.17	5.74	7.54	6.45	2.21
SAMP SIZE	0	2	33	78	27	4	22	166
AV WEIGHT	0.00	2.83	2.19	3.20	2.45	3.15	3.17	2.87
STD ERROR	0.00	.23	.07	.07	.08	.16	.13	.04
SAMP SIZE	0	2	31	68	26	4	22	153
FEMALES	118	0	1,532	10,722	2,710	354	2,003	17,439
PERCENT	.32	0.00	4.14	28.98	7.32	.96	5.41	47.13
AV LENGTH	499.00	0.00	495.00	549.63	515.87	552.33	547.94	539.10
STD ERROR	0.00	0.00	4.54	2.40	4.98	2.90	6.81	1.88
SAMP SIZE	1	0	13	91	23	3	17	148
AV WEIGHT	1.85	0.00	1.99	2.81	2.14	3.22	2.64	2.62
STD ERROR	0.00	0.00	.07	.05	.07	.32	.09	.03
SAMP SIZE	1	0	12	80	20	3	15	131
BOTH SEX	118	236	5,421	19,913	5,892	825	4,595	37,000
PERCENT	.32	.64	14.65	53.82	15.92	2.23	12.42	100.00
AV LENGTH	499.00	547.50	498.52	558.90	520.16	556.71	559.05	543.59
STD ERROR	0.00	18.50	3.82	1.95	3.86	4.48	4.70	1.47
SAMP SIZE	1	2	46	169	50	7	39	314
AV WEIGHT	1.85	2.83	2.13	2.99	2.31	3.18	2.94	2.75
STD ERROR	0.00	.23	.06	.04	.06	.17	.09	.03
SAMP SIZE	1	2	43	148	46	7	37	284

[1] Preliminary catch data.

Table 6. Chenik Lake commercial catch of sockeye salmon by age and sex with length (mm) and weight (kg), 1984[1].

ALL PERIODS COMBINED

	AGE GROUP 42	52	TOTAL
MALES	9,187	301	9,488
PERCENT	55.20	1.81	57.01
AV LENGTH	507.76	574.00	509.86
STD ERROR	1.94	13.80	1.92
SAMP SIZE	122	4	126
AV WEIGHT	1.76	2.58	1.79
STD ERROR	.03	.03	.03
SAMP SIZE	56	2	58
FEMALES	6,853	301	7,154
PERCENT	41.18	1.81	42.99
AV LENGTH	485.64	537.50	487.82
STD ERROR	2.10	11.26	2.07
SAMP SIZE	91	4	95
AV WEIGHT	1.39	2.02	1.42
STD ERROR	.03	.06	.03
SAMP SIZE	55	3	58
BOTH SEX	16,040	602	16,642
PERCENT	96.38	3.62	100.00
AV LENGTH	498.31	555.75	500.39
STD ERROR	1.43	8.91	1.41
SAMP SIZE	213	8	221
AV WEIGHT	1.60	2.30	1.63
STD ERROR	.02	.04	.02
SAMP SIZE	111	5	116

[1] Preliminary catch data.

Table 7. Tonsina Creek commercial catch of chum salmon by age and sex with length (mm) and weight (kg), 1984[1].

ALL PERIODS COMBINED

	AGE GROUP 41	51	TOTAL
MALES	1,303	145	1,448
PERCENT	62.05	6.90	68.95
AV LENGTH	605.89	651.50	610.46
STD ERROR	8.88	23.50	8.33
SAMP SIZE	18	2	20
AV WEIGHT	4.35	5.50	4.47
STD ERROR	.22	.50	.20
SAMP SIZE	18	2	20
FEMALES	580	72	652
PERCENT	27.62	3.43	31.05
AV LENGTH	586.25	654.00	593.73
STD ERROR	6.38	0.00	5.67
SAMP SIZE	8	1	9
AV WEIGHT	3.62	4.85	3.76
STD ERROR	.18	0.00	.16
SAMP SIZE	8	1	9
BOTH SEX	1,883	217	2,100
PERCENT	89.67	10.33	100.00
AV LENGTH	599.84	652.33	605.26
STD ERROR	6.45	15.66	6.01
SAMP SIZE	26	3	29
AV WEIGHT	4.13	5.28	4.24
STD ERROR	.16	.33	.15
SAMP SIZE	26	3	29

[1] Preliminary catch data.

Table 8. Aialik Bay commercial catch of chum salmon by age and sex with length (mm) and weight (kg), 1984[1].

ALL PERIODS COMBINED

	AGE GROUP 41	TOTAL
MALES	5,390	5,390
PERCENT	88.89	88.89
AV LENGTH	660.30	660.30
STD ERROR	4.70	4.70
SAMP SIZE	40	40
AV WEIGHT	5.06	5.06
STD ERROR	.11	.11
SAMP SIZE	40	40
FEMALES	674	674
PERCENT	11.11	11.11
AV LENGTH	653.40	653.40
STD ERROR	16.06	16.06
SAMP SIZE	5	5
AV WEIGHT	4.44	4.44
STD ERROR	.31	.31
SAMP SIZE	5	5
BOTH SEX	6,064	6,064
PERCENT	100.00	100.00
AV LENGTH	659.53	659.53
STD ERROR	4.54	4.54
SAMP SIZE	45	45
AV WEIGHT	4.99	4.99
STD ERROR	.10	.10
SAMP SIZE	45	45

[1] Preliminary catch data.

Table 9. Douglas River commercial catch of chum salmon by age and sex with length (mm) and weight (kg), 1984[1].

ALL PERIODS COMBINED

	AGE GROUP				
	31	41	51	61	TOTAL
MALES	643	7,715	2,250	402	11,010
PERCENT	3.65	43.84	12.78	2.28	62.56
AV LENGTH	556.75	614.44	673.29	681.40	625.54
STD ERROR	7.39	3.98	7.70	17.28	3.29
SAMP SIZE	8	96	28	5	137
AV WEIGHT	3.03	4.19	6.00	6.00	4.56
STD ERROR	.47	.31	0.00	0.00	.23
SAMP SIZE	2	13	2	1	18
FEMALES	161	5,304	884	241	6,590
PERCENT	.91	30.14	5.02	1.37	37.44
AV LENGTH	562.50	603.36	657.09	667.00	611.90
STD ERROR	20.50	4.33	9.48	1.00	3.74
SAMP SIZE	2	66	11	3	82
AV WEIGHT	2.85	3.77	4.00	5.20	3.83
STD ERROR	.30	.23	0.00	0.00	.18
SAMP SIZE	2	12	1	1	16
BOTH SEX	804	13,019	3,134	643	17,600
PERCENT	4.57	73.97	17.81	3.65	100.00
AV LENGTH	557.90	609.93	668.72	676.00	620.43
STD ERROR	7.19	2.95	6.14	10.81	2.49
SAMP SIZE	10	162	39	8	219
AV WEIGHT	2.99	4.02	5.44	5.70	4.29
STD ERROR	.28	.20	0.00	0.00	.15
SAMP SIZE	4	25	3	2	34

[1] Preliminary catch data.

Table 10. McNeil River commercial catch of chum salmon by age and sex with length (mm) and weight (kg), 1984[1].

ALL PERIODS COMBINED

	AGE GROUP 41	51	61	TOTAL
MALES	2,654	1,659	2,985	7,298
PERCENT	23.08	14.43	25.96	63.46
AV LENGTH	623.58	690.87	714.89	676.22
STD ERROR	9.67	6.74	5.82	4.51
SAMP SIZE	24	15	27	66
AV WEIGHT	3.75	5.29	5.59	4.85
STD ERROR	.24	.32	.15	.13
SAMP SIZE	11	5	14	30
FEMALES	1,548	774	1,880	4,202
PERCENT	13.46	6.73	16.35	36.54
AV LENGTH	623.07	676.57	687.59	661.79
STD ERROR	10.46	11.51	5.04	4.94
SAMP SIZE	14	7	17	38
AV WEIGHT	3.63	5.48	5.07	4.62
STD ERROR	.20	.08	.27	.14
SAMP SIZE	6	2	6	14
BOTH SEX	4,202	2,433	4,865	11,500
PERCENT	36.54	21.16	42.30	100.00
AV LENGTH	623.39	686.32	704.34	670.95
STD ERROR	7.22	5.87	4.07	3.39
SAMP SIZE	38	22	44	104
AV WEIGHT	3.71	5.35	5.39	4.77
STD ERROR	.17	.23	.13	.10
SAMP SIZE	17	7	20	44

[1] Preliminary catch data.

Average lengths and weights were all above those in 1983 except for the average weights of age 4_1 chum salmon (Table 10, Schroeder 1984). The excellent 1978 parent year production was again evident by the large percentage of age 6_1 fish. This increased the total production from the 45,000 chum salmon escapement in 1978 to 148,517 fish for a return per spawner ratio of 3.3:1.

A small sample of Sunday Creek chum salmon was obtained even though the harvest was minimal this year. The return was primarily age 4_2 chum salmon, but with a good percentage of age 5_1 chum salmon also present (Table 11).

The Ursus Cove Lagoon chum salmon harvest contained all four commonly occurring age classes, but age age 4_1 chum salmon provided 79% of the return (Table 12). Average lengths are similar to those obtained in 1976 samples (Schroeder 1984). The large percentage of age 3_1 chum salmon is very significant and often in indicative of a strong year class that will return as four and five-year-old fish. This is similar to the 1976 age structure which preceded one of the strongest returns to Ursus Cove and Cottonwood Bay in the past 10 years.

Iniskin Bay had an excellent chum salmon return in 1984. Age composition was similar to the previous year with all four commonly occurring age classes present. Age 4_1 chums comprised 73% of the harvest, 20% higher than 1983, and average lengths and weights were slightly larger for all age classes (Table 13, Schroeder 1984).

All chum salmon AWL data for the Kamishak Bay district were combined in Table 14. The most notable shifts in the age class structure of this district's returns from 1983 to 1984 were the large percentage of four-year-old chum salmon and the decrease of five-year-old chum salmon. This probably reflects the below average spawning escapements in 1979, but could be an indication of strong five-year-old returns in 1985 from the 1980 spawning escapement. Six-year-old chum salmon comprised almost 8% of the harvest and was further evidence of the excellent production from the 1978 spawning escapement.

This year was the second year of expanded sampling which has provided an increased awareness of the variability of chum salmon age classes in the Lower Cook Inlet harvest. The first accurate return per spawner data have been generated and may provide a more accurate method of forecasting chum salmon returns in the future.

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Table 11. Sunday Creek commercial catch of chum salmon by age and sex with length (mm), 1984[1].

ALL PERIODS COMBINED

	AGE GROUP				
	31	41	51	61	TOTAL
MALES	7	131	37	7	182
PERCENT	2.33	43.67	12.33	2.33	60.67
AV LENGTH	608.00	600.23	665.91	606.00	614.10
STD ERROR	29.00	6.99	7.85	71.00	6.01
SAMP SIZE	2	39	11	2	54
FEMALES	0	78	40	0	118
PERCENT	0.00	26.00	13.33	0.00	39.33
AV LENGTH	0.00	598.17	639.42	0.00	612.15
STD ERROR	0.00	8.29	13.51	0.00	7.15
SAMP SIZE	0	23	12	0	35
BOTH SEX	7	209	77	7	300
PERCENT	2.33	69.67	25.67	2.33	100.00
AV LENGTH	608.00	599.46	652.15	606.00	613.34
STD ERROR	29.00	5.37	7.99	71.00	4.61
SAMP SIZE	2	62	23	2	89

[1] Preliminary catch data.

Table 12. Ursus Lagoon commercial catch of chum salmon by age and sex with length (mm) and weight (kg), 1984[1].

ALL PERIODS COMBINED

	AGE GROUP				
	31	41	51	61	TOTAL
MALES	228	1,370	76	76	1,750
PERCENT	6.51	39.14	2.17	2.17	50.00
AV LENGTH	569.00	616.28	617.00	679.00	612.88
STD ERROR	7.00	10.61	0.00	0.00	8.35
SAMP SIZE	3	18	1	1	23
AV WEIGHT	3.40	4.55	3.75	6.00	4.43
STD ERROR	.13	.27	0.00	0.00	.21
SAMP SIZE	3	18	1	1	23
FEMALES	152	1,370	228	0	1,750
PERCENT	4.34	39.14	6.51	0.00	50.00
AV LENGTH	556.00	612.39	632.33	0.00	610.09
STD ERROR	12.00	7.84	18.02	0.00	6.65
SAMP SIZE	2	18	3	0	23
AV WEIGHT	2.90	4.12	4.50	0.00	4.06
STD ERROR	.25	.21	.43	0.00	.17
SAMP SIZE	2	18	3	0	23
BOTH SEX	380	2,740	304	76	3,500
PERCENT	10.86	78.29	8.69	2.17	100.00
AV LENGTH	563.80	614.34	628.50	679.00	611.48
STD ERROR	6.38	6.60	13.51	0.00	5.34
SAMP SIZE	5	36	4	1	46
AV WEIGHT	3.20	4.34	4.31	6.00	4.25
STD ERROR	.13	.17	.32	0.00	.14
SAMP SIZE	5	36	4	1	46

[1] Preliminary catch data.

Table 13. Iniskin Bay commercial catch of chum salmon by age and sex with length (mm) and weight (kg), 1984[1].

ALL PERIODS COMBINED

	AGE GROUP				
	31	41	51	61	TOTAL
MALES	57	7,646	2,472	172	10,347
PERCENT	.30	39.82	12.87	.90	53.89
AV LENGTH	514.00	607.76	666.12	654.33	621.96
STD ERROR	0.00	3.84	6.37	13.54	3.23
SAMP SIZE	1	133	43	3	180
AV WEIGHT	2.45	4.33	5.38	0.00	4.57
STD ERROR	0.00	.18	.29	0.00	.15
SAMP SIZE	1	34	9	0	44
FEMALES	0	6,267	2,299	287	8,853
PERCENT	0.00	32.64	11.97	1.49	46.11
AV LENGTH	0.00	601.63	643.45	650.20	614.06
STD ERROR	0.00	3.30	5.42	8.89	2.74
SAMP SIZE	0	109	40	5	154
AV WEIGHT	0.00	3.83	4.80	4.78	4.11
STD ERROR	0.00	.14	.26	.28	.12
SAMP SIZE	0	29	11	2	42
BOTH SEX	57	13,913	4,771	459	19,200
PERCENT	.30	72.46	24.85	2.39	100.00
AV LENGTH	514.00	605.00	655.20	651.75	618.32
STD ERROR	0.00	2.58	4.21	7.53	2.15
SAMP SIZE	1	242	83	8	334
AV WEIGHT	2.45	4.10	5.10	4.78	4.36
STD ERROR	0.00	.12	.19	.28	.10
SAMP SIZE	1	63	20	2	86

[1] Preliminary catch data.

Table 14. Kamishak District commercial catch of chum salmon by age and sex with length (mm) and weight (kg), 1984[1].

ALL PERIODS COMBINED

	AGE GROUP				
	31	41	51	61	TOTAL
MALES	1,103	24,421	7,720	2,994	36,238
PERCENT	1.77	39.14	12.37	4.80	58.08
AV LENGTH	563.64	610.60	671.43	699.03	629.44
STD ERROR	8.08	2.45	3.90	7.21	1.96
SAMP SIZE	14	310	98	38	460
AV WEIGHT	3.12	4.27	5.33	5.64	4.57
STD ERROR	.20	.12	.21	.14	.09
SAMP SIZE	6	76	17	16	115
FEMALES	315	18,119	5,751	1,969	26,154
PERCENT	.50	29.04	9.22	3.16	41.92
AV LENGTH	559.25	603.93	647.56	677.64	618.53
STD ERROR	9.87	2.35	4.28	4.88	1.92
SAMP SIZE	4	230	73	25	332
AV WEIGHT	2.88	3.88	4.78	5.02	4.15
STD ERROR	.16	.10	.19	.19	.08
SAMP SIZE	4	65	17	9	95
BOTH SEX	1,418	42,540	13,471	4,963	62,392
PERCENT	2.27	68.18	21.59	7.95	100.00
AV LENGTH	562.66	607.76	661.24	690.54	624.87
STD ERROR	6.66	1.72	2.89	4.76	1.39
SAMP SIZE	18	540	171	63	792
AV WEIGHT	3.07	4.10	5.10	5.39	4.40
STD ERROR	.14	.08	.14	.11	.06
SAMP SIZE	10	141	34	25	210

[1] Preliminary catch data.

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